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PATENT SPECIFICATION

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(54) ANIMAL DRIVING ROD

(71) We, MATSUSHITA ELECTRIC INDUSTRIAL Co., LTD., a corporation organised under the laws of Japan, of 1006, Oaza Kadoma, Kadoma-shi, Osaka, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to a portable animal driving rod.

A conventional driving rod employs a battery, generator or other power source to apply voltage boosted by oscillation or intermission of switch and coil to animals.

However, the conventional driving rod requires a large power source such as a battery or conventional generator, and it is therefore difficult to handle.

20 An object of this invention is to provide an animal driving rod which requires no power source and provides a strong electrical shock by light operation of the rod.

25 According to the present invention there is provided an animal driving rod comprising a high voltage generator which generates a high voltage when mechanical shock is applied to a piezoelectric element, a rectifier which rectifies the output of said high voltage generator, a capacitor which is connected with the output of said rectifier, and two contact terminals connected to respective ends of said capacitor, wherein on applying said contact terminals to an animal the charge stored in said capacitor is discharged to provide an electrical stimulus to the animal.

40 According to one embodiment of this invention, an elastic body such as a spring is interposed between a contact terminal to be touched to an animal and the main body supporting said contact terminal, therefore, allowing the contact terminal of the rod to be applied quite easily to the animals.

45 The invention will now be described by way of example only with particular refer-

ence to the accompanying drawings wherein:

Figure 1 shows a side view of an embodiment of an animal driving rod of this invention; 50

Figure 2 illustrates an electric circuit of said animal driving rod;

Figure 3 shows another example of said electric circuit; 55

Figure 4 illustrates a front end of the animal driving rod of this invention; and

Figure 5 shows another example of said front end.

In Figs. 1 to 3, numeral 1 designates a pair of contact terminals which are capable of being applied to an animal, 2 a cylindrical body or a pipe for supporting said terminals 1, 3 a main body for supporting said pipe 2, 4 a manipulating lever which is pivotally supported on said main body, 5 a capacitor having considerably larger electrostatic capacity than that of a piezo-electric element, 6 to 11 high voltage rectifiers and 12 a high voltage generating means employing a piezo-electric element. On operating the manipulating lever 4 a mechanical shock is applied to the piezo-electric element 12 which is housed in the main body 3 to generate a charge on the piezo-electric element and the charge is stored in the capacitor 5 through the rectifier. On repeating the above procedure several times the capacitor 5 is charged with a sufficiently large quantity of electrical charge. When the contact terminals 1, connected respectively to the two ends of the capacitor 5 are applied to an animal such as cattle or a horse, it is possible to apply a strong electrical stimulus, thus, it becomes possible to drive the animal in a desired direction. Since the high voltage generator can be used through repeated operations several times the amount of charge which is several times that produced by a single manipulation can be employed, as a matter of course. Thus, an easily manipulatable rod which generates 80 85 90

the required amount of charge can be produced. By varying the capacity of the capacitor the intensity of stimulus also can be easily changed. The conventional animal driving rod using a battery employs the voltage boosted by means of a coil. In contrast with this prior art, the rod of this invention employs the discharge of a capacitor and it does not hurt the skin of animals such as, for instance, horses and cattle of which the leather is used. The rod of this invention, which does not employ a heavy power source such as a battery and conventional generator, can be made portable and very compact.

As is clear from the above embodiment, the rod of this invention comprises a high voltage generator which generates a charge by mechanical shock, a rectifier which rectifies the output of said high voltage generator, a capacitor which stores the charge generated by said high voltage generator and contact terminals which are connected to respective ends of the capacitor and on applying said contact terminals to an animal the charge stored in said capacitor is discharged to provide a stimulus to the animal. Since the rod of this invention requires no power source such as a battery or conventional generator, this invention brings the advantages of being portable and of providing electric stimulus to an animal without any injury to the skin of the animal.

Figs. 4 and 5 show the front end of the animal driving rod of this invention. In Fig. 4 numerals 13 and 14 designate contact terminals, 15 a stage, made from insulating material, on which said contact terminals are fixed, and numeral 16 is a spring member connecting said stage 15, which has contact terminals 13 and 14 to a pipe 17. The lead wires 18 and 19 which are connected with said contact terminals 13 and 14 respectively are inserted into said pipe 17. The other ends of said lead wires 18 and 19 are connected to a high voltage source.

Fig. 5 shows another embodiment of the front end of the animal driving rod of this invention, wherein numeral 20 designates a contact terminal, and numeral 22 an insulating pipe which guides said contact terminal. A spring 23 is installed into said pipe 22 and said contact terminal 20 is guided by said pipe 22 to be slid in its longitudinal direction. Said insulating pipe 22 is fixed to a pipe 24. Numeral 21 designates a contact terminal which is made by a conical spring and connected to one pole of the high voltage source and another pole of the power source is connected to the contact terminal 20. Numeral 25 designates a high voltage lead wire connecting the contact terminal 20 and high voltage power source.

In either of the above-mentioned embodiments two contact terminals are employed and electric current is made to run between these contact terminals but when a large power source is used it is possible that one passage of electric current is grounded and only one contact terminal is employed.

When making contact with an animal with the contact terminals 13 and 14 of the animal driving rod of Fig. 4 the contact can be made very easily by the cushioning effect of the spring member 16. In the same manner, in the embodiment shown in Fig. 5, the contact terminal 20 is encircled by the spring 21, and the application of the terminal 20 to the animal is cushioned by the springs 21 and 23.

WHAT WE CLAIM IS:—

1. An animal driving rod comprising a high voltage generator which generates a high voltage when mechanical shock is applied to a piezo-electric element, a rectifier which rectifies the output of said high voltage generator, a capacitor which is connected with the output of said rectifier, and two contact terminals connected to respective ends of said capacitor, wherein on applying said contact terminals to an animal the charge stored in said capacitor is discharged to provide an electrical stimulus to the animal.
2. An animal driving rod as claimed in claim 1, wherein said high voltage generator, rectifier and capacitor are housed in a main body, said contact terminals being mounted on that end of a pipe fixed to said main body remote from the main body, and the mechanical shock being provided by pivoting a manipulating lever which is pivotally mounted on said main body.
3. An animal driving rod as claimed in claim 2 wherein a spring is attached at the said end of said pipe, and at the front end of said spring a stage, made from insulating material is fixed, and said two contact terminals are mounted on said stage.
4. An animal driving rod as claimed in claim 2, wherein one contact terminal is flexibly mounted on the front end of said pipe and another contact terminal consisting of a conical spring is also mounted on the front end of said pipe and encircles the said one contact terminal.
5. An animal driving rod substantially as hereinbefore described and as shown in Figures 1, 2 and 4 or as modified by Figures 3 or 5 of the accompanying drawings.

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FIG. 1

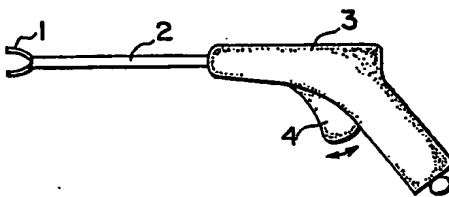


FIG. 2

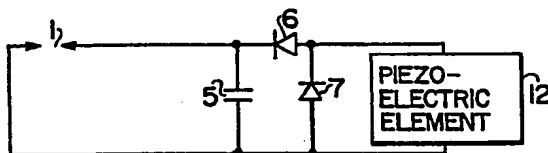


FIG. 3

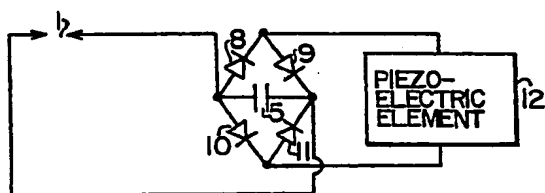


FIG. 4

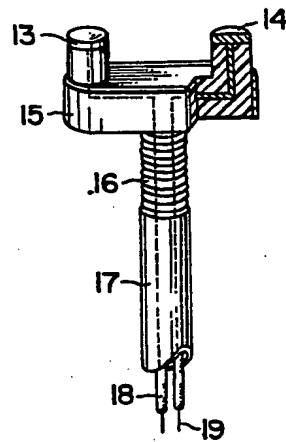


FIG. 5

